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Certificate structure study: Do stackable certificates really “add” up to a degree?

Introduction

The belief in the value of stackable certificates has increased exponentially over the past few years. Institutions have been stacking certificates to create career pathways, with widespread work on them since the early 2000s. There is a long standing view that creating career pathways by breaking degree programs into smaller sections, with an employability exit point at the end of each certificate, will make it easier for people earn degrees over time (U.S. Department of Education, Office of Career, Technical, and Adult Education, 2015). The argument is that stacking certificates allows students to step in and out of education to participate in the labor force at key times. This is thought to be both in the interest of students and employers by providing a labor force at multiple levels of employment and an increasingly skilled labor force over time. Pathways are thought to be particularly relevant for low-income populations, who can afford little time away from the labor market. An additional argument for the importance of certificates is that splitting a program into a series of “achievable” certificates increases motivation for the students who step out for employment to come back to continue their programs; they have already successfully earned credentials, so they are that much closer to attaining a degree (Dins, 2005).

The attention on career pathways has reached even greater heights recently with the passing of the Workforce Innovation and Opportunity Act (WIOA) in July 2014, which replaced the Workforce Investment Act (WIA). A new key provision of WIOA is the new emphasis on career pathways. The six references to career pathways, under WIOA Title II, are under the headings of purpose, state leadership, corrections education, grants to adult education providers and national leadership activities (Shaffer, 2014).

“The increased flexibility will help local areas use WIOA funds to better scale innovative and effective models for obtaining industry-recognized credentials, including: integrated education and training approaches; career pathways, industry or sector partnerships; cohort-based approaches; and other evidence-based approaches that reflect best practices” (Bird, Foster, & Ganzglass, 2014).

Within Washington state, stackable credentials have been an important focus of program design. “In 2008-09, all credentials awarded by Washington’s community and technical colleges increased by ten percent over the previous year. More than half of that growth can be attributed



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to increases in short-term (less than one year) certificates designed for two purposes – to help students gain immediate employment, and to serve as building blocks that can be stacked on a pathway to a longer term certificate or degree” (Washington State Board for Community and Technical Colleges, 2010).

The National Governors Association, the National Association of Workforce Boards and the American Association of Community Colleges are three significant examples of groups that have been supporting the career pathway idea for years. The American Association of Community Colleges (AACC) announced a partnership with the Bill & Melinda Gates Foundation in August 2015 titled Building Pathways for Community College Students.

However, all this emphasis on career pathways has been based on scant evidence. “...its effectiveness – and the effectiveness of most of its components – have not been rigorously evaluated. Effectiveness research often is not the first priority in the early years of an innovation, and career pathways pose special challenges for evaluation design” (Fein, 2012).

A multistate example of a career pathway initiative focusing on moving low-income/low-skilled students is Accelerating Opportunity (AO). Managed by Jobs for the Future (JFF), AO is an effort to build more streamlined and effective paths to credentials and family-sustaining employment by integrating basic skill and career-technical education in selected states and community colleges. The author participated on the team responsible for the initial initiative design and participant selection for AO.

Study purpose

The purpose of this study is to answer key questions about the structure of certificates and their function in employability and degree attainment in the Washington State Community and Technical College (CTC) System. Specifically, this study addresses the following:

- Do certificates play a role in helping students progress along career pathways over time?
- What is the demographic profile of students by type of certificates?
- How many and what types of certificates are being produced?
- What is the earning attainment by type of certificates?

Study cohort

Only workforce education programs with at least 25 students who earned a workforce degree(s) or certificate(s) were included in the study. This represented students in 111 programs. Cohorts from two academic years, 2006-07 (the year the Great Recession started) and 2011-12 (the most recent year student employment data was available), were used for the study. The two years of cohorts contained a total of 34,525 unduplicated students (13,880 in 2006-07 and 20,645 in 2011-12). Students were grouped into three distinct completion categories, those who earned degrees and certificates; those who only earned degrees; and those who only earned certificates.



Table1. Workforce program completion cohorts

Completion Category	2006-07	2011-12
Certificate Only	6,212	9,726
Degrees Only	5,030	6,300
Degree and Certificate	2,638	4,619
Total Cohort	13,880	20,645

Demographic profile of study cohort***Median Age***

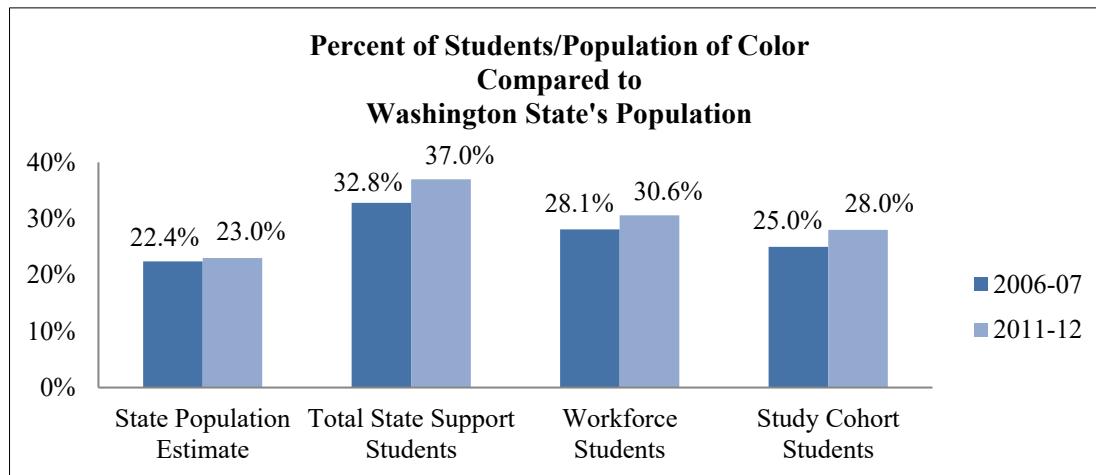
The median age of the student cohort in 2006-07 was 30 years old and in 2011-12 was 32 years old. Table 2 shows the median ages of students who earned degrees or certificates by completion category. The median age of the students overall was two years higher in 2011-12 than in 2006-07. The median age of students who earned a degree, but no certificates, was one year younger than the median in both cohort years. The median age of the students earning degrees and certificates was higher than the median in both years.

Table 2. Median age by completion category and cohort

Completion Category	2006-07	2011-12
Degrees Only	29	31
Degree and Certificate	32	33
Certificate Only	31	32
Total Cohort	30	32

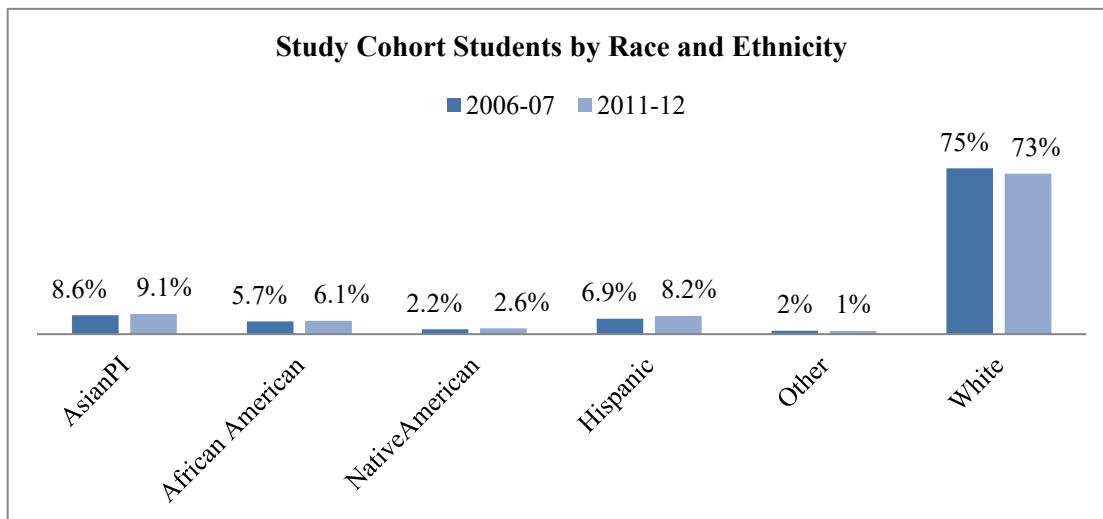
Race and ethnicity

Figure 1



Students in the community and technical college system (CTC) are more diverse overall than the Washington state population (see Figure 1). In fall of 2006, 32.8 percent were students of color compared to 22.4 percent in the state population. In fall 2011, 37 percent of the students were of color compared to the 2011 state population estimate of 23 percent. Workforce students of color were 28 percent and 31 percent respectively. This means students of color were less likely to earn a credential. The cohort students were not as diverse, in either of the study years, as the overall CTC student population. Twenty-five percent (2006) and 28 percent (2012) were students of color. The two cohorts were more diverse than the state population.

Figure 2



Note: Students may be counted in up to two race categories and thus the percent of total slightly exceeds 100 percent; the headcount will not match headcounts reported elsewhere in this study.

Source: SBCTC Data Warehouse Race Ethnic Indicator.

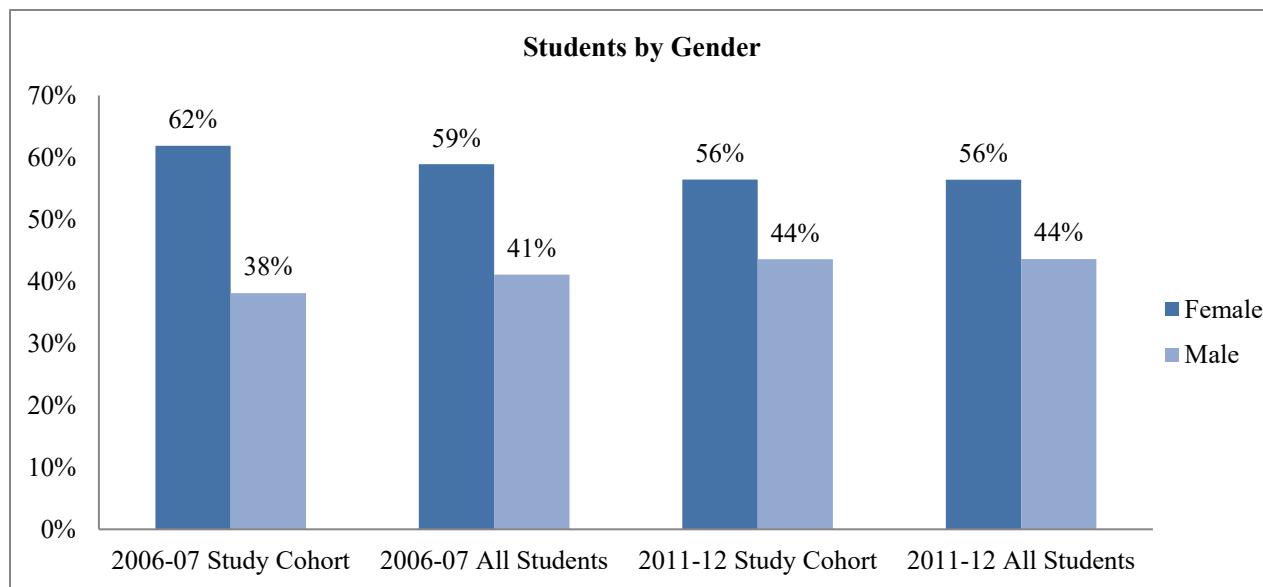
Students of color increased two percent overall compared to white students between the two cohort years. It increased in all groups except other (see Figure 2).

Gender

Female students represent a larger share of the overall CTC population than male students. In the 2006-07 study cohort, females represented 62 percent of the students verses 59 percent in the population overall. There has been a shift over recent years, with the percent of male students increasing slightly. This is likely an impact of the recession, rather than specific action(s) taken by the colleges.



Figure 3



Do certificates play a role in helping students progress along career pathways over time?

To address this question, student longitudinal transcript data was analyzed to see if there was a pattern of students moving in and out of the education system along career pathways. To observe if there was a stopping out period, an artificial break of five years pre- and post-cohort was used to simulate a stopping out period.

In the 2006-07 cohort, only five hundred and seventy-six students, out of a total of 13,880, earned an additional credential five years prior or post their earning a certificate or degree in 2006-07. Some of these students could have been working on the credential earned in 2006-07, which would mean that less than four percent of students are exiting college and returning within five years to earn the next stackable credential on the program's career pathway.

The 2011-12 cohort was nearly fifty percent larger, but the results were comparable, again only four percent of the cohort students earned credentials in the preceding outlying years. It was not possible to look five years post yet, but only eight hundred and twenty-nine students (4%) were found in the longitudinal data in all the years prior to five years before the credential earned in the cohort year 2011-12. Only a portion of these students were working on the same program; others were working on coursework in different program areas.

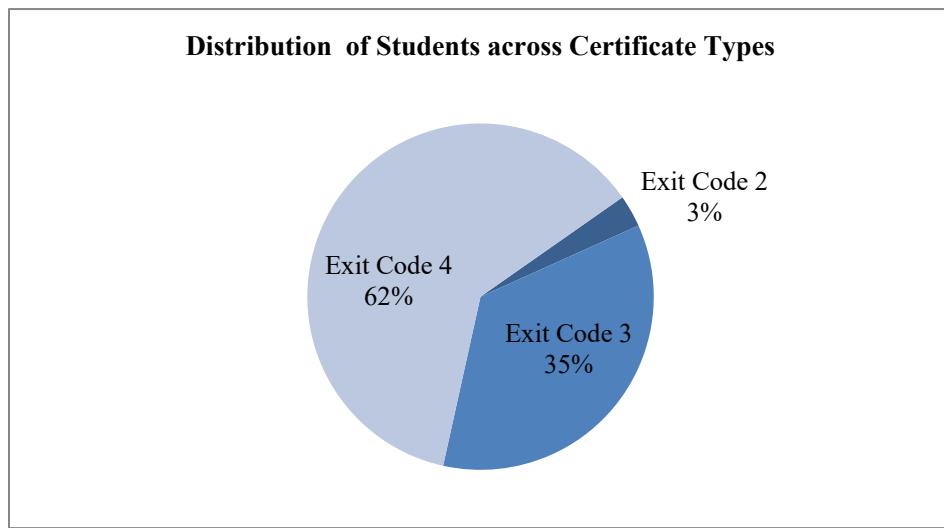
The following series of tables go into more depth of the 2011-12 cohort. Table 3 breaks down the number and type of certificates earned by graduates who only earned a certificate and not a degree, ordered by median wage. The three columns on the right identify the percentages of degrees by exit code type. The types of certificates included in the table are as follows:

- Certificate with an exit code of 2: ≥ 90 credits or 2+Years
- Certificate with an exit code of 3: 45-89 credits or 1 to 2 Years
- Certificate with an exit code of 4: 1-44 credits or Less than One Year

Table 3. Median wages and earnings by type of certificate

Ending CIP	Certificates Exit 2,3,or4 >=20	# of Certs	Med Wage	Med Earnings	Number of Cert Exit Code 2	Number of Cert Exit Code 3	Number of Cert Exit Code 4	Total
510712	MEDICAL RECEPTIONIST	45	\$ 11.54	\$ 18,131		27	48	75
120501	BAKING & PASTRY ARTS	46	\$ 11.58	\$ 16,707	7	27	33	67
120503	CULINARY ARTS/CHEF TRAIN	31	\$ 11.62	\$ 10,757	14	15	20	49
513902	NURSING ASST/AIDE	258	\$ 11.73	\$ 18,237			397	397
520408	OFFICE OCCS & CLERICAL	50	\$ 11.93	\$ 18,755	2	24	99	125
131210	EARLY CHILDHOOD EDUC & TCH	99	\$ 12.54	\$ 21,316		32	125	157
120401	COSMETOLOGY	25	\$ 12.70	\$ 15,255	20	19		39
470604	AUTO MECHANICS	97	\$ 13.18	\$ 25,405	16	18	103	137
510703	HEALTH UNIT COORD/WARD CLK	57	\$ 13.46	\$ 24,761		27	55	82
470603	AUTOBODY/COLLISION & REPR	27	\$ 13.69	\$ 24,188	14	3	30	47
510713	MED INSURANCE CODING SPEC	92	\$ 13.91	\$ 22,134	3	99	65	167
510810	EMT (AMBULANCE)	38	\$ 13.98	\$ 20,664		3	52	55
510601	DENTAL ASSISTANT	97	\$ 14.01	\$ 21,352		118	11	129
110601	MICROCOMPUTER APPS, GENL	37	\$ 14.02	\$ 20,817		9	42	51
510716	MED ADMIN ASST/SECTY	44	\$ 14.03	\$ 20,611		65	25	90
510805	PHARMACY TECHNICIAN/ASST	98	\$ 14.68	\$ 26,323		111	30	141
511009	PHLEBOTOMY	91	\$ 14.68	\$ 25,296		1	123	124
510801	MEDICAL/CLINICAL ASST	215	\$ 14.81	\$ 25,847	27	266	1	294
520204	OFFICE MGMT & SUPERVISION	27	\$ 15.02	\$ 24,785		23	18	41
150613	MANUFACTURING TECH	30	\$ 15.48	\$ 29,220		15	31	46
510707	HEALTH INFO/MEDICAL RECORD	28	\$ 15.64	\$ 27,467		24	20	44
520302	ACCOUNTING TECH & BOOKPG	136	\$ 15.85	\$ 27,968	1	87	147	235
480501	MACHINE TOOL TECH	31	\$ 16.13	\$ 33,870	7	4	29	40
480508	WELDING TECH	118	\$ 16.42	\$ 27,477	8	45	134	187
510802	CLIN/MED LAB TECH (CERT)	29	\$ 16.67	\$ 31,497		13	21	34
513501	MASSAGE THERAPY	39	\$ 16.89	\$ 16,395		44	16	60
	AIRCRAFT/FRAME/PWRPLANT							
470687	ME	75	\$ 16.92	\$ 33,262	1	2	101	104
220302	LEGAL ASST/PARALEGAL	86	\$ 16.94	\$ 38,921		42	87	129
490205	TRUCK & BUS DRIVER	125	\$ 16.95	\$ 30,478		1	182	183
	COMP SYS							
110901	NETWORK/TELECOMM	35	\$ 17.18	\$ 30,308	4	35	12	51
511501	SUBSTANCE ABUSE/ADDITION	37	\$ 17.38	\$ 29,879		46	17	63
470191	AIRCRAFT ELECT FAB & INSTL	79	\$ 17.55	\$ 38,026			101	101
470607	AIRFRAME MECH & AIRCRAFT	471	\$ 18.28	\$ 37,828			563	563
513901	LICENSED PRACTICAL NURSING	248	\$ 20.20	\$ 35,355	9	304		313
110802	DATA WAREHOUSE & DB ADMIN	25	\$ 23.59	\$ 47,169		19	15	34

Figure 4



One important consideration is that students come to college with a range of prior experience including previous college-level education. Not understanding this fact can lead to false conclusions about the benefit of certificates. For example in the top certificates listed above, seventy-nine percent had at least some postsecondary education. Fifty-three percent of the DATA WAREHOUSE & DB ADMIN listed in Figure 4 (above) had a Bachelor's degree or higher. Fifty-one percent of SUBSTANCE ABUSE/ADDICTION students had at least some postsecondary education. Again, it is very important to realize when looking at employment and wages.

Exit code 2 is the least common of the certificate types, this category includes certificates in cosmetology and auto mechanics. As evident in the following Figure 5, nearly sixty percent of the students completing certificates at or above 90 credits earn the lowest wages. Students in the shortest certificates are more likely to be in the highest wage category. It must be kept in mind that nearly eighty percent had previously earned degrees or certificates in other areas. Aerospace certificates were primarily the cause. Healthcare occupations make up sixty percent of the mid wage jobs and fifty-seven percent of the lowest wage tier. Certified nursing aid represents thirty percent of the lowest wage jobs.

Figure 5

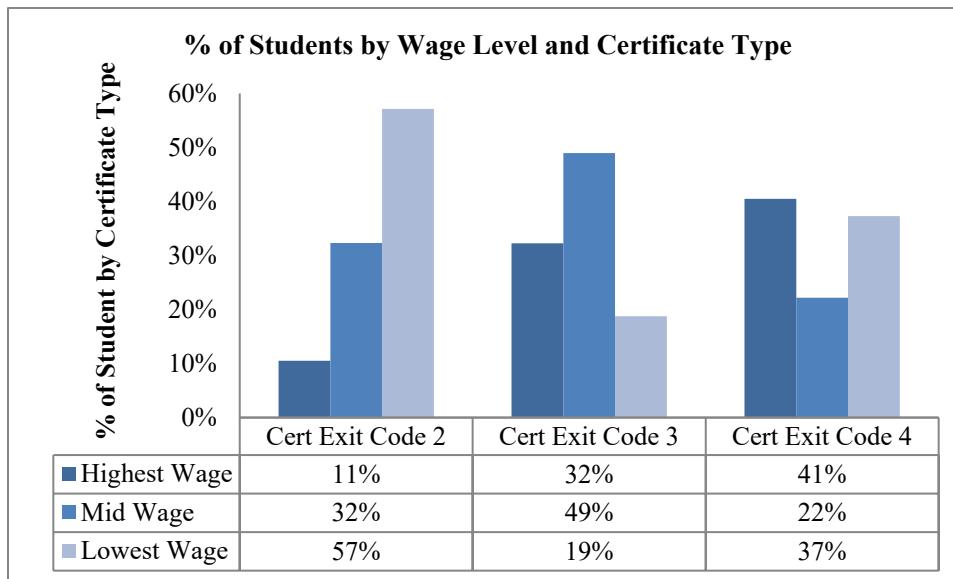


Table 4 describes the comparison of degrees to certificates. Only programs that had completers with both degrees and certificates are included in the table. Ten certificates have higher wages than their degree counterpart, notated by negative numbers in the table. In looking at the table, nearly sixty-five percent of the programs show those who earned degrees have higher wages. However, twenty-one percent of certificate holders earn wages that are at least forty cents higher, which is the rough equivalent of an additional \$800 per year for those working full time. For low income earners, in particular, this is a substantial amount of money.

These programs should be reviewed to determine if employers really need a degree or if certificate holders are sufficient. With the high cost of education to the student and the unlikelihood that they will return, it is important to ensure that students are fully informed of the return on their investment of time and money. The top three wage differences have degree earners making \$4.23 to \$7.43 or more an hour more. This translates into roughly an extra \$8,000 to \$14,800 per year for the top degree earners verses certificate earners if they are working full time. It is critical to realize that the effects of prior education are not accounted for in the above analysis. Many of these certificates are sought as skill upgrades to employees who already have degrees and work experience, which has a significant impact on wages and earnings.

Table 4. Median wage and earnings differential by degree and certificate by program

CIP_TITLE	Median Wage	Median Earnings	Degree vs Cert Med Wage	Degree vs Cert Med Earn	Total Degree & Certs	% Degree
DATA WAREHOUSE & DB ADMIN	\$ 31.02	\$ 79,251	\$ 7.43	\$ 32,082	41	17%
CLIN/MED LAB TECH (CERT)	\$ 22.71	\$ 41,597	\$ 6.04	\$ 10,100	73	53%
LICENSED PRACTICAL NURSING	\$ 21.59	\$ 42,030	\$ 1.39	\$ 6,674	372	16%
MANUFACTURING TECH	\$ 19.71	\$ 43,557	\$ 4.23	\$ 14,337	51	10%
MASSAGE THERAPY	\$ 19.14	\$ 18,411	\$ 2.25	\$ 2,016	80	25%
MACHINE TOOL TECH	\$ 17.81	\$ 34,336	\$ 1.68	\$ 467	84	52%
WELDING TECH	\$ 17.25	\$ 30,874	\$ 0.83	\$ 3,396	381	51%
HEALTH INFO/MEDICAL RECORD	\$ 16.91	\$ 32,517	\$ 1.27	\$ 5,050	127	65%
COMP SYS NETWORK/TELECOMM	\$ 16.85	\$ 28,638	\$ (0.33)	\$ (1,671)	342	85%
AIRCRAFT/FRAME/PWRPLANT ME	\$ 16.52	\$ 33,886	\$ (0.40)	\$ 625	145	28%
LEGAL ASST/PARALEGAL	\$ 16.00	\$ 28,923	\$ (0.94)	\$ (9,998)	299	57%
MICROCOMPUTER APPS, GENL	\$ 15.94	\$ 19,762	\$ 1.92	\$ (1,055)	80	36%
ACCOUNTING TECH & BOOKPG	\$ 15.63	\$ 28,061	\$ (0.22)	\$ 93	683	66%
MEDICAL/CLINICAL ASST	\$ 15.49	\$ 29,665	\$ 0.68	\$ 3,817	570	48%
DENTAL ASSISTANT	\$ 15.21	\$ 24,544	\$ 1.20	\$ 3,192	230	44%
PHARMACY TECHNICIAN/ASST	\$ 14.55	\$ 27,852	\$ (0.14)	\$ 1,529	200	30%
SUBSTANCE ABUSE/ADDICTION	\$ 14.47	\$ 26,826	\$ (2.91)	\$ (3,053)	143	56%
AUTOBODY/COLLISION & REPR	\$ 14.21	\$ 23,096	\$ 0.52	\$ (1,093)	91	48%
HEALTH UNIT COORD/WARD CLK	\$ 14.18	\$ 25,641	\$ 0.72	\$ 880	83	1%
MED INSURANCE CODING SPEC	\$ 13.94	\$ 22,502	\$ 0.03	\$ 368	210	20%
MED ADMIN ASST/SECTY	\$ 13.57	\$ 24,363	\$ (0.46)	\$ 3,752	265	66%
OFFICE MGMT & SUPERVISION	\$ 13.51	\$ 22,085	\$ (1.51)	\$ (2,700)	176	77%
EARLY CHILDHOOD EDUC & TCH	\$ 13.37	\$ 20,599	\$ 0.83	\$ (717)	341	54%
AUTO MECHANICS	\$ 13.09	\$ 25,274	\$ (0.09)	\$ (131)	324	58%
BAKING & PASTRY ARTS	\$ 12.88	\$ 21,367	\$ 1.30	\$ 4,660	110	39%
CULINARY ARTS/CHEF TRAIN	\$ 12.54	\$ 19,244	\$ 0.92	\$ 8,486	210	77%
COSMETOLOGY	\$ 12.27	\$ 17,719	\$ (0.43)	\$ 2,463	82	52%
OFFICE OCCS & CLERICAL	\$ 12.06	\$ 20,344	\$ 0.13	\$ 1,589	142	12%

Summary

In looking at the data above, students are not stacking credentials to move in and out of educational pathways. There is not enough guidance given and attention paid to getting community college students in a program and through the first year, even though students often enter college lacking clear goals. If there was better guidance and fewer choices students may move more easily toward degree completion. An increasing number of colleges are working to solve this problem with the creation of the Guided Pathways Initiative, based on three things. First, faculty are creating road maps, which provide students with a clear program sequence. Second, mechanisms are put in place to encourage students to develop clear educational goals. Third, advising and frequent feedback are embedded within the program. Early alerts ensure students are supported before things are too far out of hand (Jenkins & Cho, 2013).

However, colleges should also think about a cost/benefit to the students. Students who have earned a certificate are not generally returning for further education. Some colleges are successful in encouraging students to come back. In looking at the data, it is clear that colleges need to understand their pathways beyond developing them. They need to ensure that they are not developing non-pathways. If students are not or, more importantly, cannot move along the pathway, there is no pathway. Colleges need to be clear with students about what is really possible. Another point to consider is that although there may be a labor market demand, is it in the best interest of the students to provide them with long, high credit certificates which lead to low wage employment, without a true career and education pathway that works for them? It is clear that colleges need to think about their student engagement practices when it comes to stackable credentials.



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